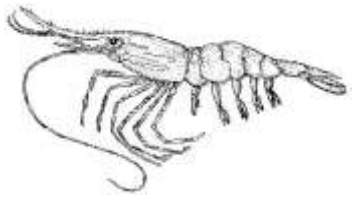
ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
FISHERY UPDATE

Cora Campbell, Commissioner
Jeff Regnart, Director



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Time: 4:00 p.m.

SOUTHEAST ALASKA EXPERIMENTAL SPOT SHRIMP SPAWNER INDEX MANAGEMENT INVESTIGATION UPDATE

The department received funding from the legislature to conduct an experimental inseason management program for the Southeast Alaska shrimp pot fishery beginning in the 2012/2013 season. The intent of the research is to collect data that could provide information on a pot shrimp management approach used in Canada called the Spawner Index (SI) model. Field data was collected in three fishing areas (Seymour Canal, District 7, and District 8) beginning in the 2012/2013 commercial pot shrimp season and will continue for two more seasons.

The department will investigate the Canadian SI management methodology as a means to be more reactive to annual fluctuations in the spot shrimp populations than the current set guideline harvest level (GHL) approach. Under SI management, the number of female shrimp per pot (the spawner index or "SI") is monitored over the course of the fishery and the closing date is determined as the time when the SI threshold is reached. In theory, fishing to the SI threshold will leave an adequate number of females in the water to maintain a stable population base and provide excess production to support sustainable fisheries.

In order to determine if the SI system could be modified to work in Alaska, preliminary work was completed. ADF&G shellfish research staff traveled to British Columbia (BC) to work with Department of Fisheries and Oceans staff to better understand how this approach is used in Canadian fisheries. Since the size of a standard BC pot differs from legal pots in the Southeast Alaska fishery, and it is known that larger Alaskan commercial pots catch more shrimp, the BC SI threshold was modified to account for the difference in efficiency using preseason pot comparison studies conducted by the department. Analyses of the results, plus a 20% conservation factor which the Canadians add in high use areas, led to a SI threshold for Alaskan waters of approximately 10 female shrimp per pot.

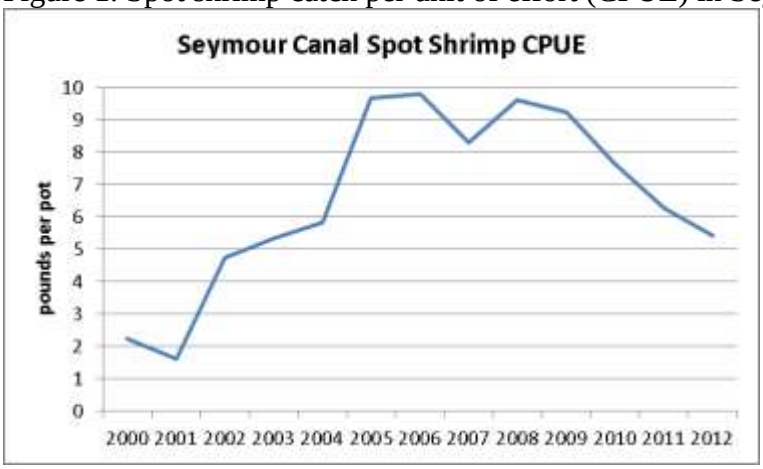
The study plan called for implementation of SI management in one SE Alaska GHL area along with monitoring the fishery to track SI and evaluate the effects. Seymour Canal was chosen as the initial test site for investigating the applicability of this management method in SE Alaska waters. Seymour Canal is in the Juneau Management Area, and is located within the boundaries of District 11. Through the 2011/2012 season, District 11 was managed for a GHL of 20,000

pounds of spot and coonstripe shrimp. At the 2012 SE Alaska BOF Shellfish meeting, Seymour Canal was separated from the remainder of District 11 and given a guideline harvest range (GHR) of 0 to 30,000 pounds of spot shrimp. Since the intent in 2012 was to manage to the experimental SI, no GHL was determined for Seymour Canal.

There is very little information available on the Seymour Canal spot shrimp population other than commercial harvest and effort levels, and in many years much of this information is confidential due to the very small number of vessels making landings. The first documented landings of spot shrimp from Seymour Canal occurred in the 1984/1985 season, and the area has been fished each season since 1993. Prior to 2000, seasonal harvests did not exceed 6,000 pounds of shrimp. Over the most recent ten years, harvests have averaged 18,800 pounds, with the most recent four-year average over 23,000 pounds of spot shrimp.

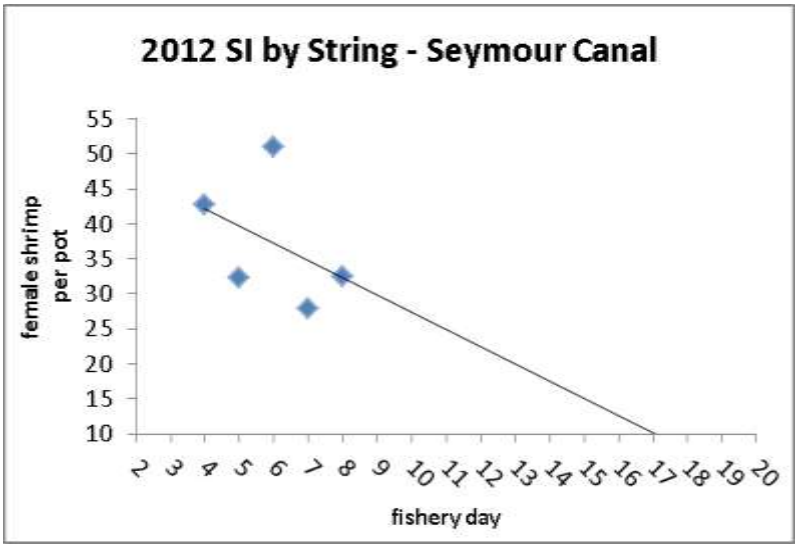
A traditional metric for stock health has been the catch per unit effort (CPUE), measured in pounds of shrimp per pot lift and the graph below shows the values for Seymour Canal since 2000 (Figure 1).

Figure 1. Spot shrimp catch per unit of effort (CPUE) in Seymour Canal, 2000–2012.



ADF&G management and research staff were present on the grounds during the 2012 fishery. Spawner index sampling began on the third day of the fishery and continued for 6 days (October 3-8). All four boats participating in the fishery were sampled daily. In total, 434 pots in 66 strings were sampled with sex determinations made for 23,920 individual shrimp. All participating fishermen were interviewed daily for their catch and effort information, as well as personal observations and opinions. All had previous experience in Seymour Canal and acknowledged the decline in CPUE in recent years that continued in 2012. Fishermen also observed a decrease in the extent of the productive shrimp grounds, and it was generally accepted that the biomass appeared to be in decline. Using reported catch rates, management staff determined that approximately 20,000 pounds of shrimp would be harvested by day 8, yet the SI method projected a closure on day 17 which would result in a larger harvest if the fishery were to continue until the SI threshold was met (Figure 2). Increasing the harvest on a biomass showing signs of decreasing abundance was not viewed as sustainable, so management staff announced the fishery would close at the end of day 8. The resulting harvest of 22,000 pounds of spot shrimp was the third largest in the history of the Seymour Canal shrimp fishery (approximately 90% of the historical high) and the CPUE had declined for the third straight year to 55% of the historical high.

Figure 2. Projected date of closure of the Seymour Canal shrimp fishery using spawner index results.



Management staff decided that basing the 2013 season management in Seymour Canal on the SI threshold derived from the BC model could lead to unsustainable harvest levels in this area. Contributing significantly to this decision are the declines observed in all other Juneau management area shrimp fisheries that have resulted in GHL reductions and area closures. ADF&G research staff recommended a 25% reduction in harvest in this area to preserve stock health, so a 15,000 pound GHL was set as a target for the 2013 fishery.

This decision effectively shifted the nature of the SI investigation from an experimental management system to a feasibility study and management approach evaluation. Although this may be a shift from the original plan, it still fulfills the funding obligation to examine the Canadian SI management system to determine if it is a viable management model for SE Alaska fisheries. The complete three years of data will be necessary to fully evaluate the applicability of SI management to SE Alaska fisheries.

The first year of data provides valuable insights into SI management in SE Alaska. In 2012, the SI model projected the Seymour Canal fishery to remain open for one week after the department closed the fishery. The majority of shrimp caught per pot in Seymour Canal were large females, in contrast to District 7 where male shrimp outnumbered females. District 7 was sampled for 8 days prior to the area closure in order to further evaluate the model. District 7 was not managed by the SI model but the area was closed within one day of the date projected by the SI management model. At that time, male shrimp outnumbered females and the number of shrimp per pot was still relatively high.

It is possible that Seymour Canal is near the end of a large recruitment event of shrimp which began about 9 years ago, and the prevalence of large females, and the dearth of males is because the majority of the shrimp are in the same cohort. Data collection over the next 2 years will help to better understand the population dynamics of Seymour Canal shrimp. District 8 was sampled for two days after the close of District 7 with remaining survey time and weather constraints limiting the number of boats that could be sampled. Not enough data was collected to project a closure but the SI for all vessels sampled in the district were below the closure SI threshold.

Based on the results of the 2012 investigation, the department's intent is to continue gathering SI data during the 2013 shrimp pot fishery. Sampling will begin in Seymour Canal. When Seymour Canal closes, sampling efforts will move to District 7 and repeat the previous year's investigations there. It is hoped the information collected in this and subsequent field seasons can provide insight into setting appropriate SI thresholds for the SE Alaska region, as well as highlighting areas where this approach might be an effective tool for responsive and sustainable inseason management.

ADF&G management staff will be on the grounds in Seymour Canal collecting SI data over the course of the 2013 fishery, and will be monitoring traditional parameters of stock health such as industry CPUE and the extent of commercially viable shrimp grounds. If inseason metrics suggest a seasonal increase in the Seymour Canal spot shrimp biomass has occurred, the 15,000 pound GHL for the area may be exceeded.

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